REMARKS

Applicants have amended their claims in order to further clarify the definition of various aspects of the present invention. Specifically, claim 1 has been amended to recite that the stirring rotor is provided with support members, having a disk shape, at both ends of the stirring rotor, and connecting support rods between the support members, in addition to the plurality of hollow disks; claim 1 has been further amended to recite that the stirring rotor has an outer diameter which is equal to the outer diameter of the hollow disks. Claim 1 has been still further amended to recite that the stirring rotor, rather than the reactor, is further provided with scraping plates; and to recite that the outer diameter of the support member at the outlet side thereof for a liquid feed is smaller than the outer diameter of the stirring rotor, with scraping vanes provided on the support member on the vessel inner end wall-facing side of the outlet side thereof.

Independent claim 2 has been amended to recite that the stirring rotor is provided with a support member having a disk shape at one end of the stirring rotor and another support member having a disk shape at the other end thereof, and has an outer diameter which is equal to the outer diameter of the hollow disks; the wherein clause of claim 2 has been amended to recite the "stirring rotor", rather than the "reactor". Amendments to claim 7 are similar to amendments to claim 2.

In light of amendment to claims 1, 2 and 7, claims 8-11 have been cancelled without prejudice or disclaimer; in addition, claim 6 has been cancelled without prejudice or disclaimer.

Applicants respectfully submit that all of the claims presented for consideration by the Examiner patentably distinguish over the teachings of the

references applied by the Examiner in rejecting claims in the Office Action mailed September 16, 2004, that is, the teachings of the U.S. patents to Rothert, et al., No. 3,761,059, and to Hohlbaum, No. 4,244,923, under the provisions of 35 USC §103.

It is respectfully submitted that these references as applied by the Examiner would have neither taught nor would have suggested such a reactor for producing a high molecular weight polyester as in the present claims, having, among other components, the recited stirring rotor, wherein such stirring rotor is provided with support members, having a disk shape, at both ends of the stirring rotor, and has a plurality of hollow disks, with an outer diameter of the stirring rotor being equal to the outer diameter of the hollow disks, and with the outer diameter of the support member at the outlet side for a liquid feed being smaller than the outer diameter of the stirring rotor. See claim 1; note also claims 2 and 7.

In addition, it is respectfully submitted that these references would have neither taught nor would have suggested such reactor, having features as discussed previously, and furthermore wherein the stirring rotor is without any rotating shaft at a position of a rotating center axis (note claims 1, 2 and 7); and/or wherein scraping vanes are provided on the support member on the vessel inner end wall-facing side (see claims 1, 2 and 7); and wherein the stirring rotor within the vessel is provided with a plurality of stirring blocks having structure based upon the viscosity of the liquid feed (note claim 7).

The invention as claimed in the above-identified application is directed to a reactor for producing, e.g., a high molecular weight polyester. Applicants have found that by, inter alia, providing a support member of the stirring rotor, at the end of the outlet side thereof, having an outer diameter which is smaller than the outer

diameter of the stirring rotor, with the outer diameter of the stirring rotor being equal to the outer diameter of the plurality of hollow disks thereof, material having a high viscosity can easily be passed through the outlet, so that the reactor can easily and effectively be utilized in forming a high viscosity product. See page 27, lines 10-15, of Applicants' specification.

Applicants have further found that by providing stirring blocks having a structure based upon viscosity of the material at a specific location of a respective stirring block, passing of the material through the reactor can easily and effectively be accomplished, and stirring of the material can effectively and efficiently be achieved, providing a product with a desired high degree of polymerization. In particular, Applicants recognize that in this reactor (that is, the third reactor according to the disclosure in the above-identified application), viscosity of the material increases, from a relatively low viscosity to a high viscosity; and the stirring rotor structure is modified along the length of the reactor recognizing this change in viscosity. This is accomplished, according to the present invention, through the stirring rotor within the vessel being divided into a plurality of stirring blocks, having structure based upon the viscosity of the liquid feed thereto, as discussed in the disclosure of the above-identified application.

Moreover, using the reactor according to the present invention, the inner end wall surfaces of the vessel can be substantially self-cleaned, to prevent the product from being deposited on and remaining on the surfaces of the reactor.

Rothert, et al. discloses an apparatus and method for carrying out mixing, reacting and propelling of flowable materials. The apparatus includes a rotary carrier in the form of a cage having a row of substantially planar discoidal propulsion

members mounted thereon to rotate therewith, the centers of the discoidal members being substantially at the axis of rotation of the carrier so that each discoidal member symmetrically surrounds that axis. Each of the discoidal members is inclined somewhat away from being normal or perpendicular in relation to the axis of rotation, so that one point, hereinafter designated the "trailing point" of the periphery of that member, is closer to the intake end of the apparatus than any other point. The trailing points of the successive members are disposed along a line which is generally helicoidal, with the axis of the helicoidal line being substantially coaxial with the axis of rotation of the carrier. Note the paragraph bridging columns 1 and 2 of this patent. This patent discloses that the discoidal members are annular discs, having a continuous and unobstructed central opening. See column 2, lines 20-29. Note also column 2, lines 48-50 and 55-58. This patent discloses, as an especially advantageous embodiment, use of a screw-shaped stripper provided bearing against a fixed opposing surface on the end wall on the outlet side of the reactor housing, this stripper continuously removing material which has been forwarded to the outlet end from the end wall opposing surface, the last annular disc in this embodiment being preferably provided as the only annular disc which lacks a tilt, thus being perpendicular to the rotational axis. Note column 3, lines 29-39. See also column 3, lines 53-57. Note further column 3, lines 41-51; column 5, lines 19-28; and the paragraph bridging columns 6 and 7.

It is respectfully submitted that Rothert, et al. would have neither taught nor would have suggested such apparatus as in the present claims, including, inter alia, wherein the outer diameter of the support member (at, e.g., the outlet end) is smaller

than the outer diameter of the stirring rotor, among other features of the presently claimed apparatus.

The contention by the Examiner on page 3 of the Office Action mailed September 16, 2004, that the outer diameter of the another support member 112 is smaller than the outer diameter of the stirring rotor 26, in Rothert, et al., is noted. However, it is respectfully submitted that the member 112 in Rothert, et al. is a stub shaft, not a support member as in the present claims. It is respectfully submitted that the screw-shaped stripper 221 as described in Rothert, et al. corresponds to the support member as in the present claims; however, the screw-shaped stripper 221 in Rothert, et al. does not have a disk shape, contrary to the present claims which recite support members having a disc shape. Thus, contrary to the conclusion by the Examiner, it is respectfully submitted that Rothert, et al. does not disclose, nor would have suggested, aspects of the present invention, including, inter alia, the stirring rotor provided with support members having a disk shape.

In Rothert, et al., the screw-shaped stripper 221, which has a hollow shape, can scrape material adhered to the inner end side of the vessel so that the outer diameter of the screw shaped stripper is not required to be small. In comparison, according to the present invention, since the support member has a disk shape, it is necessary to transfer material scraped from the end section of the vessel to the outlet. For this purpose, according to the present invention the outer diameter of the support member on the outlet side is made smaller than the outer diameter of the stirring rotor.

Clearly, and contrary to the conclusion by the Examiner, it is respectfully submitted that Rothert, et al. would have neither taught nor would have suggested

aspects of the present invention, including, inter alia, the stirring rotor provided with the support members having a disk shape, and/or function/advantages thereof.

It is respectfully submitted that the additional teachings of Hohlbaum would not have rectified the deficiencies of Rothert, et al., such that the presently claimed invention as a whole would have been obvious to one of ordinary skill in the art.

Hohlbaum discloses apparatus for contacting materials, and is particularly concerned with a slurry/liquid contactor. See column 1, lines 5-10. The apparatus includes a drum having disks so as to divide the drum into compartments in the drum interior, with annular passages for movement of phases of the treated material from compartment to compartment. The structure includes at least one blade which is carried by the rotor, which penetrates into the annular passages and which is operable to maintain the passages at least partly clear of stationary solids. This patent discloses that the blade may be in the form of a plough extending from the discs and into the annular passage. Note the paragraph bridging columns 1 and 2 of this patent. See also column 2, lines 61-64; column 3, lines 27-29; and column 4, lines 3-10.

Initially, it is noted that Hohlbaum is primarily concerned with a solid/liquid contactor including a drum with annular passages between the drum periphery and compartment forming discs. It is respectfully submitted that one of ordinary skill in the art concerned with in Rothert, et al. would not have looked to the teachings of Hohlbaum, directed to different technologies and different functions.

In any event, even assuming, arguendo, that the teachings of Rothert, et al. and Hohlbaum were properly combinable, such combined teachings would have neither disclosed nor would have suggested the presently claimed reactor, including,

inter alia, the stirring rotor provided with the support members having a disk shape, particularly wherein the outer diameter of the support member at the outlet side is smaller than the outer diameter of the stirring rotor, and advantages achieved by the present invention due thereto.

In view of the foregoing comments and amendments, reconsideration and allowance of all claims presently in the application are respectfully requested.

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Respectfully submitted,

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